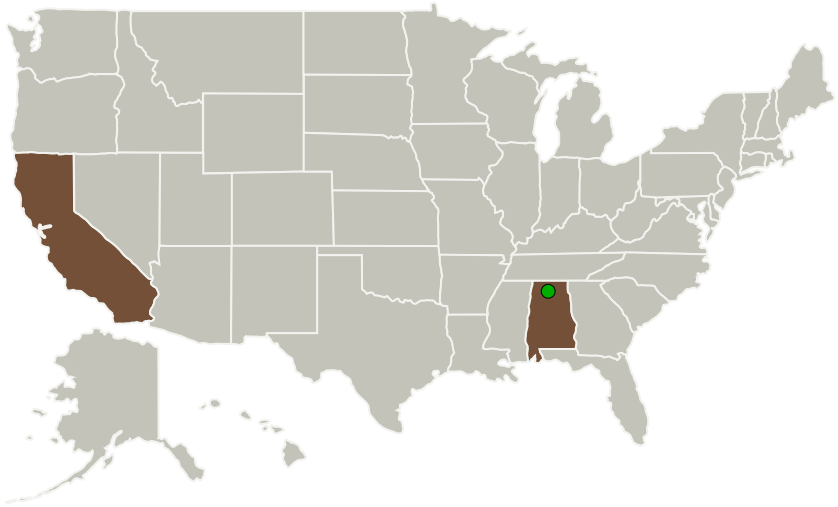
Ultra-Low-Density (ULD) Polymer Matrix Composites (PMCs), Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

This NASA Phase I SBIR proposal seeks to demonstrate a new class of ultra-low-density (ULD) polymer matrix composites of high specific modulus and specific strength for mass sensitive space and aerospace applications. the "baseline" composite system for this program is state-of-the-art carbon fiber reinforced epoxy and/or bismaliimide. The key materials innovations are light-weight hollow carbon fibers in a light-weight porous (closed pores) polymer matrix. This innovation in composites technology would enable structural composites of lower density and higher specific modulus and strength than any currently available. If successful, this technology could have a profound impact and reduced payload weight and cost. Potential applications include planetary landers, satellites, large orbiting arrays and structures, booster motor cases. This program benefits from the support and participation of Lockheed Martin and Raytheon.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
MATECH Advanced Materials	Lead Organization	Industry	Westlake Village, California
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Ultra-Low-Density (ULD) Polymer Matrix Composites (PMCs), Phase I

Table of Contents

Ultra-Low-Density (ULD) Polymer Matrix Composites (PMCs), Phase I

Completed Technology Project (2010 - 2010)

Primary U.S. Work Locations	
Alabama	California

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139509)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

MATECH Advanced Materials

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

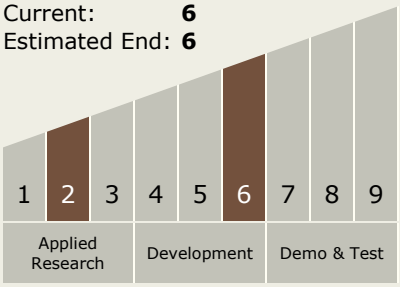
Carlos Torrez

Principal Investigator:

Edward Pope

Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**



Ultra-Low-Density (ULD) Polymer Matrix Composites (PMCs), Phase I

Completed Technology Project (2010 - 2010)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.7 Special Materials

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System